

## DAFTAR PUSTAKA

- Adams, W. K., & Wieman, C. E. (2007). Problem Solving Skill Evaluation Instrument — Validation Studies. *AIP Conference Proceedings*, 883, 18–21. <https://doi.org/10.1063/1.2508681>
- Aggerholm, K., Standal, O., Barker, M., & Larsson, H. (2018) On practising in physical education: outline for a pedagogical model, *Physical Education and Sport Pedagogy*, 23:2, 197-208, DOI: 10.1080/17408989.2017.1372408
- Anderson, L dan Krathwol, D. (2010). *Kerangka Landasan untuk Pembelajaran, Pengajaran, dan Asesmen Revisi Taksonomi Pendidikan Bloom*. Yogyakarta: Pustaka Belajar.
- Arikunto, S. (2010). *Dasar-dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
- Arikunto, S. (2013). *Prosedur Penelitian Suatu Pendekatan Praktik. Edisi Revisi VII*. Jakarta: Rineka Cipta.
- Atkins, L., & Tummons, J. (2017). Professionalism in vocational education: international perspectives. *Research in Post-Compulsory Education*, 22(3), 355–369. <https://doi.org/10.1080/13596748.2017.1358517>
- Bejan, A. (2016). Life and evolution as physics. *Communicative and Integrative Biology*, 9(3), 1–13. <https://doi.org/10.1080/19420889.2016.1172159>
- Benson, H. (1995). University Physics, 903–925. <https://doi.org/10.1119/1.1932659>
- Brewe, E., Kramer, L., & O'Brien, G. (2008). CLASS shifts in modeling instruction. *AIP Conference Proceedings*, 1064, 75–78. <https://doi.org/10.1063/1.3021277>
- Buschhüter, D., Spoden, C., & Borowski, A. (2017) Physics knowledge of first semester physics students in Germany: a comparison of 1978 and 2013 cohorts, *International Journal of Science Education*, 39:9, 1109-1132, DOI: 10.1080/09500693.2017.1318457
- BSNP. (2010). *Laporan BSNP Tahun 2010*. Jakarta: Badan Standar Nasional Pendidikan.
- Çakici, Y., & Turkman, N. (2013). An Investigation of the Effect of Project-Based Learning Approach on Children ' s Achievement and Attitude in Science. *The Online Journal of Science and Technology*, 3(2), 9–17.
- Çalışkan, S., Selçuk, G. S., & Erol, M. (2010). Effects of the problem solving strategies instruction on the students' physics problem solving performances and strategy usage. *Social and Behavioral Sciences*, 2(2), 2239–2243. <https://doi.org/10.1016/j.sbspro.2010.03.315>
- Casey, A., & MacPhail, A. (2018) Adopting a models-based approach to teaching physical education, *Physical Education and Sport Pedagogy*, 23:3, 294-310,

DOI: 10.1080/17408989.2018.1429588

- Chi, M. T. H. H., & Glaser, R. (1983). Problem Solving Abilities. *Human Abilities: An Information Processing Approach*, 227–250. Retrieved from <http://eric.ed.gov/?id=ED257630%5Cnfile:///Users/jessicabartley/Downloads/ADA134717.pdf%5Cnhttp://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA134717>
- Cook, R. E., & Slife, B. D. (1978). Developing Problem- Solving Skills, (*Maker 1981*), 5–13.
- Creswell W. John. (2013). *Research Design Pendekatan Kualitatif, Kuantitatif, dan Mixed*. Yogyakarta: Pustaka Pelajar.
- Dahar, R. (2011). *Teori-Teori Belajar dan Pembelajaran*. Jakarta: Erlangga.
- Dancy, M., Brewe, E., & Henderson, C. (2007). Modeling success: Building community for reform. *AIP Conference Proceedings*, 951, 77–80. <https://doi.org/10.1063/1.2820951>
- Darma, S. dkk. (2013). *Tantangan Guru SMK Abad 21*. Jakarta: Kementrian Pendidikan dan Kebudayaan.
- Deni, F. (2013). Penerapan Modelling Methods Of Physic Instruction Untuk Mengembangkan Kemampuan Problem Solving Siswa SMP. *Unnes Physics Education Journal*, (2)1
- Docktor, J. L., & Mestre, J. P. (2014). Synthesis of discipline-based education research in physics, 020119, 1–58. <https://doi.org/10.1103/PhysRevSTPER.10.020119>
- Dreyfus, B. W., Gupta, A., & Redish, E. F. (2015). Applying Conceptual Blending to Model Coordinated Use of Multiple Ontological Metaphors. *International Journal of Science Education*, 37(5–6), 812–838. <https://doi.org/10.1080/09500693.2015.1025306>
- Dreyfus, T. (2002). Advanced mathematical thinking processes. *Advanced Mathematical Thinking*, 25–41.
- Durden, J., Brewe, E., & Kramer, L. (2012). “Implicit action”: Understanding discourse management in modeling instruction. *AIP Conference Proceedings*, 1413, 187–190. <https://doi.org/10.1063/1.3680026>
- Ellis, T. J., & Hafner, W. (2008). Building a Framework to Support Project-Based Collaborative Learning Experiences in an Asynchronous Learning Network. *Interdisciplinary Journal of E-Learning and Learning Objects Formerly*, 4.
- Etkina, E., Warren, A., & Gentile, M. (2006). The Role of Models in Physics Instruction. *The Physics Teacher*, 44(1), 34–39. <https://doi.org/10.1119/1.2150757>
- Fairbrother, B. (1994). Problem solving and learning. *Problem Solving and*

Dedi Ropika, 2018

PENGARUH PENERAPAN MODELING INSTRUCTION PADA MATERI LISTRIK DINAMIS TERHADAP PENINGKATAN KEMAMPUAN MEMAHAMI DAN KEMAMPUAN MEMECAHKAN MASALAH FISIKA SISWA SMK

Universitas Pendidikan Indonesia | repository.upi.edu | perpustakaan.upi.edu

*Misconceptions in Chemistry and Physics - Proceedings of the 1994 International Seminar, University of Dortmund, Germany, 154–173.*

- Fearick, R., Pillay, S., & Ibrahim, B. (2007). Modelling and visualization in the teaching and learning of physics CET colloquium, (October).
- Feranie, S. (2005). *Peningkatan Daya Guna Praktikum Fisika Dasar melalui Penata- an Ulang Petunjuk/Panduan Praktikum, Seting Pelaksanaan serta Prosedur Penilaian Praktikum*. Bandung: Tidak Diterbitkan
- Finkelstein, N. (2005). Learning physics in context: A study of student learning about electricity and magnetism. *International Journal of Science Education*, 27(10), 1187–1209. <https://doi.org/10.1080/09500690500069491>
- Fraenkel, Jack R & Norman E. Wallen. (2012). *How to Design and Evaluate Research in Education*. New York: McGraw-Hill.
- Fuhrmann, T., Schneider, B., & Blikstein, P. (2018) Should students design or interact with models? Using the Bifocal Modelling Framework to investigate model construction in high school science, *International Journal of Science Education*, 40:8, 867-893, DOI: 10.1080/09500693.2018.1453175
- Gerace, W. J., & Beatty, I. D. (2005). Teaching vs . Learning: Changing Perspectives on Problem Solving in Physics Instruction. *Scientific Reasoning Research Institute & Department of Physics*, 1–10.
- Gok, T., & Silay, I. (2008). The effects of problem-solving strategies on students' achievement, on the cooperative learning groups in physics teaching. *Hacettepe Universitesi Egitim Fakultesi Dergisi-Hacettepe University Journal of Education*, 4(34), 116–126.
- Gustafsson, P., Jonsson, G., & Enghag, M. (2015). The problem-solving process in physics as observed when engineering students at university level work in groups. *European Journal of Engineering Education*, 40(4), 380–399. <https://doi.org/10.1080/03043797.2014.988687>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis. *Vectors*. <https://doi.org/10.1016/j.ijpharm.2011.02.019>
- Hake, R. R. (1999). Analyzing change/gain scores. *Unpublished.[Online] URL: Http://Www. Physics. Indiana. Edu/~ Sdi/AnalyzingChange-Gain. Pdf, 16(7),*
- Harper, N. J., & Webster, A. L. (2017). Higher learning: impacts of a high-altitude adventure-based field school on college student development. *Journal of Adventure Education and Outdoor Learning*, 17(1), 67–81. <https://doi.org/10.1080/14729679.2016.1217782>
- Harrison, M. (2016) Making practical work work: using discussion to enhance pupils' understanding of physics, *Research in Science & Technological Education*, 34:3, 290-306, DOI: 10.1080/02635143.2016.1173668

- Harvey, S., & Pill, S. (2018) Exploring physical education teachers 'everyday understandings' of physical literacy, *Sport, Education and Society*, DOI: 10.1080/13573322.2018.1491002
- Hein, G. E. (1991). Constructivist Learning Theory. *The Museum and the Needs of People - CECA*, (October), 15–22.
- Heller, K., & Heller, P. (1999). Problem-Solving Labs. *Introductory Physics I Mechanics. Cooperative Group Problem-Solving in Physics*.
- Heller, P., Keith, R., & Scott, A. (1992). Teaching problem solving through cooperative grouping (Part 1): Groupe Versus Individuel Problem Solving. *MAA Notes*. <https://doi.org/10.1119/1.17117>
- Helmi, M. (2011). *Pengaruh Penggunaan Metode Pemodelan terhadap Peningkatan Pemahaman Konsep Fisika Ditinjau dari Pengetahuan Awal Siswa Kelas X SMA Negeri 1 Jember Tahun Pelajaran 2009-2010*. Universitas Negeri Malang: Tidak diterbitkan.
- Hestenes, D. (1987). Toward a modeling theory of physics instruction. *American Journal of Physics*, 55(5), 440–454. <https://doi.org/10.1119/1.15129>
- Hestenes, D. (1997). Modeling methodology for physics teachers. In E. Redish & J. Rigden (Eds.) *The changing role of the physics department in modern universities*. American Institute of Physics.
- Hestenes, D. (2007). Notes for A Modeling Theory of Science. Cognition and Physics Education. In A.L Ellermeijer (ed.). *Modelling in Physics and Physics Education*.
- Igwebuike, T. B. (2013). Effects of conceptual change pedagogy on achievement by high ability integrated science students on energy concepts. *International Journal of Research Studies in Educational Technology*, 2(1), 3–14. <https://doi.org/10.5861/ijrset.2012.123>
- Jackson, J., Dukerich, L., & Hestenes, D. (2005). Modeling Instruction: An Effective Model for Science Education. *Science Educator*, 17(1), 10–17. <https://doi.org/10.1007/s10972-010-9225-9>
- Jensen, J., Niss, M., & Jankvist, U. (2017) Problem solving in the borderland between mathematics and physics, *International Journal of Mathematical Education in Science and Technology*, 48:1, 1-15, DOI: 10.1080/0020739X.2016.1206979
- Jobson, J. D. (1992). Applied Multivariate Data Analysis. *Design*, 102, 618. <https://doi.org/10.1016/j.peva.2007.06.006>
- Jumadin, L., & Hidayat, A. (2017). Perlunya Pembelajaran Modeling. *jurnal pendidikan: teori, penelitian dan pengembangan*, 325–330.
- Kelly, R., McLoughlin, E., & Finlayson, E. (2016) Analysing student written solutions to investigate if problem-solving processes are evident throughout,

- International Journal of Science Education*, 38:11, 1766-1784, DOI: 10.1080/09500693.2016.1214766
- Kohl, P. B., Rosengrant, D., & Finkelstein, N. D. (2007). Strongly and weakly directed approaches to teaching multiple representation use in physics, 1–10. <https://doi.org/10.1103/PhysRevSTPER.3.010108>
- Latterell, C. M. (2000). What Is Problem-solving Ability ?, 1–12.
- Lawshe, C. (1975). A Quantitative Approach To Content Validity. *Personnel Psychology*, (1), 563–575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>
- Lin, S., & Singh, C. (2013). Using an isomorphic problem pair to learn introductory physics : Transferring from a two-step problem to a three-step problem, *020114*, 11–19. <https://doi.org/10.1103/PhysRevSTPER.9.020114>
- Malone, K. L. (2006a). A Comparative Study of the Cognitive and Metacognitive Differences Between Modeling and Non-Modeling High School Physics Students.
- Malone, K. L. (2006b). The Convergence of Knowledge Organization, Problem Solving Behavior, Metacognition Research With The Modeling Method of Physics Intruction-Part I. *Journal of Physics Teacher Education Online*, 4(1): 14.
- Manthey, S., & Brewe, E. (2013). Toward university modeling instruction-biology: Adapting curricular frameworks from physics to biology. *CBE Life Sciences Education*, 12(2), 206–214. <https://doi.org/10.1187/cbe.12-08-0136>
- Mclaughlin, S. (2003). Effect of Modeling Instruction on Development of Proportional Reasoning I: an empirical study of high school freshmen, 1–20.
- Meli, K., Zacharos, K., & Koliopoulos, D. (2016) The Integration of Mathematics in Physics Problem Solving: A Case Study of Greek Upper Secondary School Students, *Canadian Journal of Science, Mathematics and Technology Education*, 16:1, 48-63, DOI: 10.1080/14926156.2015.1119335
- Miller, K., Lasry, N., Chu, K., & Mazur, E. (2013). Role of physics lecture demonstrations in conceptual learning, *020113*, 1–5. <https://doi.org/10.1103/PhysRevSTPER.9.020113>
- Namdar, B., & Shen, J. (2015) Modeling-Oriented Assessment in K-12 Science Education: A synthesis of research from 1980 to 2013 and new directions, *International Journal of Science Education*, 37:7, 993-1023, DOI: 10.1080/09500693.2015.1012185
- Ogilvie, C. A. (2009). Changes in students' problem-solving strategies in a course that includes context-rich, multifaceted problems. *Physical Review Special Topics - Physics Education Research*, 5(2), 1–14. <https://doi.org/10.1103/PhysRevSTPER.5.020102>



- Purwanto. (2010). *Evaluasi Hasil Belajar*. Yogyakarta: Pustaka Belajar.
- Sak, U. (2011). Selective Problem Solving (sps): A Model for Teaching Creative Problem-Solving. *Gifted Education International*, 27(3), 349–357. <https://doi.org/10.1177/026142941102700310>
- Sands, D., Parker, M., Hedgeland, H., Jordan, S. & Galloway, R. (2018) Using concept inventories to measure understanding, *Higher Education Pedagogies*, 3:1, 60-69, DOI: 10.1080/23752696.2018.1433546
- Singgih. (2002). *Statistik Parametrik*. Jakarta: Gramedia Pustaka Utama.
- Sudjana. (2005). *Metode Statistika*. Bandung: Tarsito.
- Sugiyono. (2013). *Metode Penelitian Pendidikan; Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Sujarwanto, E. (2014). Kemampuan Pemecahan Masalah Fisika Pada Modeling Instruction Pada Siswa Sma Kelas Xi. *Jurnal Pendidikan IPA Indonesia*, 2(2), 203–208. <https://doi.org/10.15294/jpii.v3i1.2903>
- Sung, E. (2017). The Influence of Visualization Tendency on Problem-solving Ability and Learning Achievement of Primary School Students in South Korea. *Thinking Skills and Creativity*. <https://doi.org/10.1016/j.tsc.2017.10.007>
- Teledahl, A. (2017). How young students communicate their mathematical problem solving in writing. *International Journal of Mathematical Education in Science and Technology*, 48(4), 555–572. <https://doi.org/10.1080/0020739X.2016.1256447>
- Tongchai, A., Sharma, M. D., Johnston, I. D., Arayathanitkul, K., & Soankwan, C. (2011). Consistency of students' conceptions of wave propagation: Findings from a conceptual survey in mechanical waves. *Physical Review Special Topics - Physics Education Research*, 7(2), 1–11. <https://doi.org/10.1103/PhysRevSTPER.7.020101>
- Vesenska, J. (2002). A Comparison Between Traditional and “Modeling” Approaches to Undergraduate Physics Instruction at Two Universities with Implications for Improving Physics Teacher Preparation. *Journal of Physics Teacher Education*, (1), 3–7.
- Walsh, L. N., Howard, R. G., & Bowe, B. (2007). Phenomenographic study of students' problem solving approaches in physics. *Physical Review Special Topics - Physics Education Research*, 3(2), 1–12. <https://doi.org/10.1103/PhysRevSTPER.3.020108>
- Wedelin, D., Adawi, T., Jahan, T., & Andersson, S. (2015). Investigating and developing engineering students' mathematical modelling and problem-solving skills. *European Journal of Engineering Education*, 40(5), 557–572. <https://doi.org/10.1080/03043797.2014.987648>

- Wells, M., Hestenes, D., & Swackhamer, G. (1995). A modeling method for high school physics instruction. *American Journal of Physics*, 63(7), 606–619. <https://doi.org/10.1119/1.17849>
- Wibowo. (2012). *Penerapan model pembelajaran berbasis proyek untuk meningkatkan hasil belajar kognitif dan keterampilan berfikir kreatif*. Tesis SPs UPI Bandung: Tidak diterbitkan.
- Wittmann, M. C., Steinberg, R. N., & Redish, E. F. (1999). Making Sense of How Students Make Sense of Mechanical Waves. *The Physics Teacher*, 37(January), 15. <https://doi.org/10.1119/1.880142>